Dr. Michael Corradini, Wisconsin Distinguished Professor and chair of the University of Wisconsin-Madison's Engineering Physics Department, discussed nuclear power reactor safety and construction as part of the INL Fellows Colloquium.

Reactor safety expert presents at Laboratory Fellows Colloquium

by Keith Arterburn and Cynthia Thiel, *INL Communications*

The Idaho National Laboratory Fellows Colloquium sponsored Dr. Michael Corradini, an internationally known expert, to speak to INL researchers and staff about key safety issues for advanced nuclear power systems.

INL Laboratory Fellow David Petti introduced Corradini to about 100 INL employees at the July 15 forum at the University Place Bennion Student Union building and hosted him during his visit.

During his hour-long presentation, Corradini touched on several key topics, including current status and nuclear power plant economics, fuel supply and reliability, spent nuclear fuel management, carbon dioxide reduction potential, and emerging safety issues from generations II, III+ and IV reactors.

He underscored that capital cost projections have increased because of material and labor cost escalation, but noted that the same is true for alternative energy systems. Providing a detailed explanation of the status of existing plants, he forecasts that Generation IV reactors will occur only through Generation III and only if the life cycle extensions of Generation II reactors are deemed reliable.

A Wisconsin Distinguished Professor and chair of the Engineering Physics Department at the University of Wisconsin-Madison, Corradini also detailed a series of financial obstacles that included the cost of borrowing money for capital construction and the costs surrounding the novel, yet untested, licensing process.

An interesting element of the presentation was the comparison of the top 15 U.S. power companies with the top 15 global companies (outside of U.S.) in three categories, including equity value, number of customers and megawatt capacity. Far and away the largest company is Électricité de France with equity of $133.3 billion, more than 40 million customers and a capacity surpassing 124,000 megawatts. The next closest company was E On from Germany. Exelon Corporation in the U.S. would be ranked about ninth among the global companies.

A central point of Corradini's presentation was that "nuclear power is the only base-load power source, other than fossil-fueled power plants, that can deliver dispatchable electricity, particularly in large urban areas."

Corradini has a distinguished history in nuclear engineering, including being appointed to the U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards in 2006 and being elected to the National Academy of Engineering in 1998.

The INL Fellows Colloquium periodically sponsors guest speakers who have exceptional reputations in science and engineering, so that INL researchers and managers can benefit from the most experienced professionals in various fields.

A 30-minute question-and-answer session followed Corradini's seminar, during which he engaged in lively and colorful discussion on topics ranging from the NRC's criteria in the new combined licensing process to the docketing of a small, modular light-water reactor application expected this year — and for the first time ever.

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